ABSTRACT

The author sought to discover why seborrheic keratoses that are not symptomatic or clinically suspicious are not considered therapeutically important to most clinicians. The author conducted an office-based, observational study examining how the diagnosis of asymptomatic seborrheic keratoses personally affects patients and what these patients think concerning treatment. Many patients reported being bothered by the diagnosis of seborrheic keratoses, even when told it's not cancerous, and indicated an interest in its treatment. Lack of insurance coverage for the treatment of non-symptomatic seborrheic keratoses may be the primary reason clinicians do not consider seborrheic keratoses therapeutically important, as clinicians often find the discussion of "self payment" with their patients to be awkward. Furthermore, patients may not understand the implications that "lack of medical necessity" may have on their treatment options. The author describes a clinical approach that may better serve patients and clinicians through the compartmentalization of asymptomatic seborrheic keratoses treatment as a cosmetic procedure within the clinical practice model.

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OBSERVATIONAL STUDY

A Closer Look at Seborrheic Keratoses: Patient Perspectives, Clinical Relevance, Medical Necessity, and Implications for Management

JAMES Q. DEL ROSSO, DO, FAOCD, FAAD
Research Director, JDR Dermatology Research and Private Dermatology Practice, Thomas Dermatology, Las Vegas, Nevada

SEBORRHEIC KERATOSES (SK) are one of the most common benign cutaneous neoplasms encountered in ambulatory dermatology practice, estimated to affect at least 20 percent of the adult population, especially older adults.[1] Lesions are most often multiple, with variability in size, clinical morphology, and color, including within a given individual presenting with multiple SKs.[1,2] The most common sites affected are the trunk and head/neck region, although any cutaneous site may be affected other than palms and soles.[1,2] They typically present as round or oval, sharply demarcated papules or plaques, often with a keratotic (rough) surface texture that appears to be "stuck on" the surface

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Author correspondence: James Q. Del Rosso, DO, FAOCD, FAAD;
E-mail: jqdelrosso@yahoo.com

of the skin; the color of SKs may range from light tan to dark brown, and the size is typically between 0.5cm to 1.5cm; however, individual lesions may be smaller or larger (Figures 1A, 1B, 1C).[1,2] Some SKs may appear with a surface texture that is smooth, waxy, or very flat (almost macular), the latter occurring especially in SKs that appear initially as a lentigo.[2]

The variability in clinical appearance of SKs is reflective of the multiple histologic types of SK, which include the hyperkeratotic, acanthotic, adenoid (reticulated), clonal, melanoacanthoma, and irritated histologic subtypes; variant subtypes of SK include stucco keratoses (commonly multiple and presenting as small light tan "rough" papules on the legs and ankles), and dermatosis papulosa nigra (multiple small hyperpigmented papules most commonly affecting the facial skin of blacks and Asian patients).[1–3] Histologic features of SK can vary; however, all SKs exhibit hyperkeratosis, acanthosis, and papillomatosis.[1] Although the diagnosis of SK can usually be made accurately based on clinical inspection and without need for biopsy, dermoscopy may be helpful in some cases to distinguish SK from solar lentigines, lichenoid keratoses, and benign and malignant melanocytic proliferations (i.e., lentigo maligna, lentigo maligna melanoma).[4,5]

There are data evaluating how commonly clinicians may encounter SKs when seeing patients in their office practices. Data collected from the evaluation of teenage and adult patients in Australia, stratified by age and gender, showed that 12 percent of individuals between the ages of 15 and 25 years presented with a median of six SKs/person; despite a wide range in the number per person, SKs were present in 100 percent of individuals older than 50 years of age, with a median of 69 SKs/person.[2] No differences were noted in the prevalence of SKs or the number of SKs/person between genders, however, SKs in frequently sun-exposed areas tended to be flatter and usually larger than 0.3cm in diameter as compared to those at sites that are not usually sun-exposed.[2] This latter observation may suggest that more SKs in sun-exposed sites are likely to develop within lesions that were solar lentigines or flat SKs at their outset, a factor to be considered by clinicians when a patient reports that a given lesion is changing (especially in surface texture). Another publication stated that SKs affect approximately 83 million Americans in the United States, with a survey of dermatologists (N=594) reporting that they diagnose an average of 155 SKs per month, with almost all patients presenting with multiple SKs and 43 percent of patients undergoing treatment for at least some SK lesions (usually cryosurgery).[6]

This article raises the question as to why SKs that are not symptomatic or suspicious clinically have been ignored from a therapeutic standpoint. The main focus of the article is to report and review findings from an office-based observational study of SK looking at the perspectives of patients regarding how the presence of SKs affects them personally and their thoughts regarding management of their SKs. The subject of lack of insurance coverage for treatment of non-symptomatic SKs is also addressed, as clinicians often find the discussion of "self payment" by the patient to be awkward or uncomfortable; many patients do not understand the strict implications of "lack of medical necessity" associated with treating lesions solely because they are cosmetically bothersome. This article discusses how clinicians may compartmentalize management of asymptomatic SKs within the "cosmetic basket" of their practice, similar to how they direct the procedural treatment of photodamage, facial lines and wrinkles, scars, and facial dyschromias.

OBJECTIVES AND METHODOLOGY

The objectives of this observational study, completed across the United States in 10 ambulatory dermatology practices, were to collect the opinions and perspectives of patients regarding their non-symptomatic SKs and to capture prevalence data on symptomatic SKs among patients who agreed to participate. All participants

Figure 1. A: Seborrheic keratosis presenting as a well-defined, hyperkeratotic, papillomatous, brown plaque with classic "stuck on" appearance and a focal region of pink color superiorly; B: Seborrheic keratosis presenting as a well-defined, stuck on-appearing tan papule with some surface hyperkeratosis; C: Seborrheic keratosis presenting as a well-defined, stuck on-appearing dark brown plaque. Focal lighter areas are apparent; many reflective of horn cysts that are also observable histologically. *Photos courtesy of Jason Smith, MD*

were provided full disclosure about the study and were assured that individual confidentiality would be maintained with any form of publication. The study was soley related to data collection with no therapies rendered as part of the study.

The protocol required the characterization of non-symptomatic SK in dermatology patients between 40 and 70 years of age in 10 regionally diverse, private dermatology practices. The location and number of SK lesions were documented for all patients by clinical examination. Importantly, the number/percentage of patients who presented with one or more SK lesions as a primary or secondary complaint, those that had SKs but did not mention them as a complaint, and those that had symptomatic SKs were all captured. The study also included inquiry about interest in treatment to remove SK lesions with each patient. Details on methodology are outlined in Table 1.

RESULTS

Study results include both the designated observations from clinical examinations completed by the investigators and survey responses completed by the participating patients. The survey completed by the patients covered several areas related to SK, each of which is reviewed here.

General observations about SKs. A total of 406 adult patients completed the study. The most common locations where SKs were noted were the trunk (85% of patients) and the face (68% of patients). Men tended to exhibit a greater quantity of SKs overall as compared to women, including presence and number of truncal SKs. Interestingly, approximately one-fourth (27%) of the patients were aware of the diagnosis of SK, with over half (55%) asking specifically about their SKs during their office visit without prompting. Many patients (61%), especially women, took specific actions to disguise or cover their SKs, such as avoiding types of clothing that would expose their SKs; some reported using makeup or certain hairstyles to cover SKs.

Interest in treatment for non-symptomatic SK is highest among women and is greatest for facial SKs; 38 percent of patients reported having SKs removed in the past. The most common reasons reported by patients for having non-symptomatic SKs removed were concern that they may be something serious (57%), followed by not liking their appearance (53%) or how they feel when touched (44%); 45 percent of patients stated equal motivation related to both health and appearance concerns as reasons for seeking treatment for SKs. When patients with non-symptomatic SKs were shown before and after treatment photographs, the majority (83%) expressed at least some interest in getting their SKs treated, even if they have to pay out of pocket for the treatment. When patients

Table 1: Methodology of observational study on non-symptomatic seborrheic keratoses

QUALIFICATIONS
• Both genders; age range 40–69 years • Have non-symptomatic SK lesions
SCREENING
• For all patients seen with SK, including those who do not meet the required inclusion criteria to participate in the study, data on number and location of SKs were collected.
RESEARCH DESIGN
• Interviews were conducted with patients during a visit to the dermatologist via an iPad or on paper (hard copy). • The study was conducted at 10 private dermatology offices across the United States. • 406 patients completed the study
DATA COLLECTION AND PATIENT FLOW
• Investigator examines patient during a routine office visit. • If patient had at least one visible SK (on face, neck, trunk, or upper extremities), investigator documented number and location of SKs. • Investigator/staff documented if SK was an unprompted primary or secondary complaint or if SK was solely noted by the investigator during clinical examination. • If patient was not treated for inflamed SK at this visit, investigator delivered diagnosis of SK and provided patient with a brief discussion about the diagnosis of SK. Investigator/staff offered the patient the opportunity to participate in an anonymous study that required completion of a survey. Patients who participated were compensated $10 for their time and cooperation. • Investigator or their designated staff obtained consent after explaining process for completing survey on iPad or paper form. • Patients completed the study survey about SKs, which was then collected by staff at which time the patient responsibility to the study was then completed.

chose not to have SKs removed, it was most often because the lesions were not bothersome or serious. Cost was not often mentioned as a reason for not having them removed or treated.

Prevalence of symptomatic SKs. Among patients examined during the study, 19 percent had symptomatic (inflamed/irritated) SKs that were treated that day. Older patients (age 60–69 years) were more likely to have a symptomatic SK than younger patients (40–59 years of age).

Prevalence and location of non-symptomatic SKs. The average number of non-symptomatic SKs per patient examined during this study was 26.2, with the largest number reported on the trunk (Table 2, Figures 2 and 3). The lower extremities were not examined for SK lesions in this study. Patients aged 60 to 69 years exhibited significantly more SKs on their face, neck, or neckline, and trunk than patients aged 40 to 59 years. Older patients (50–69 years of age) were more likely to have more than 20 SKs, which contributed to the higher average number of SKs noted in older patients (Figure 2).

Men tended to exhibit

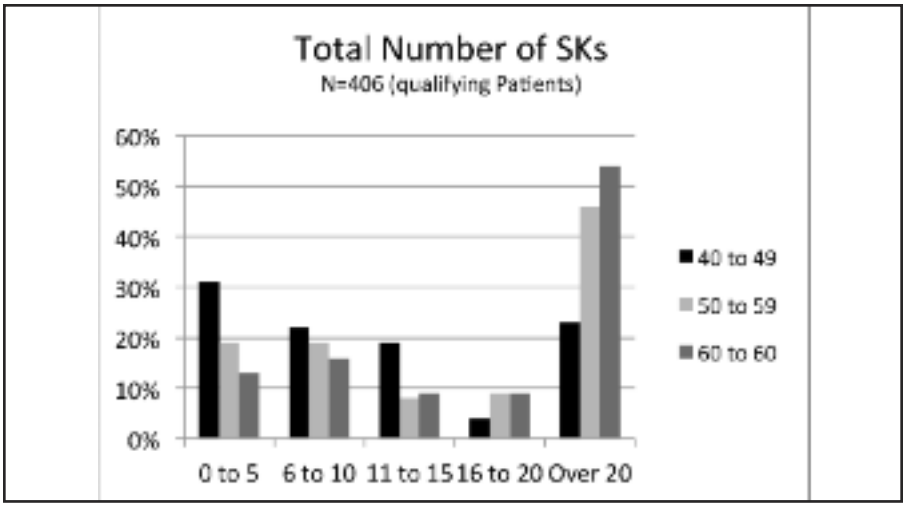

Figure 2. Total number of seborrheic keratoses stratified by age range (percentage basis)

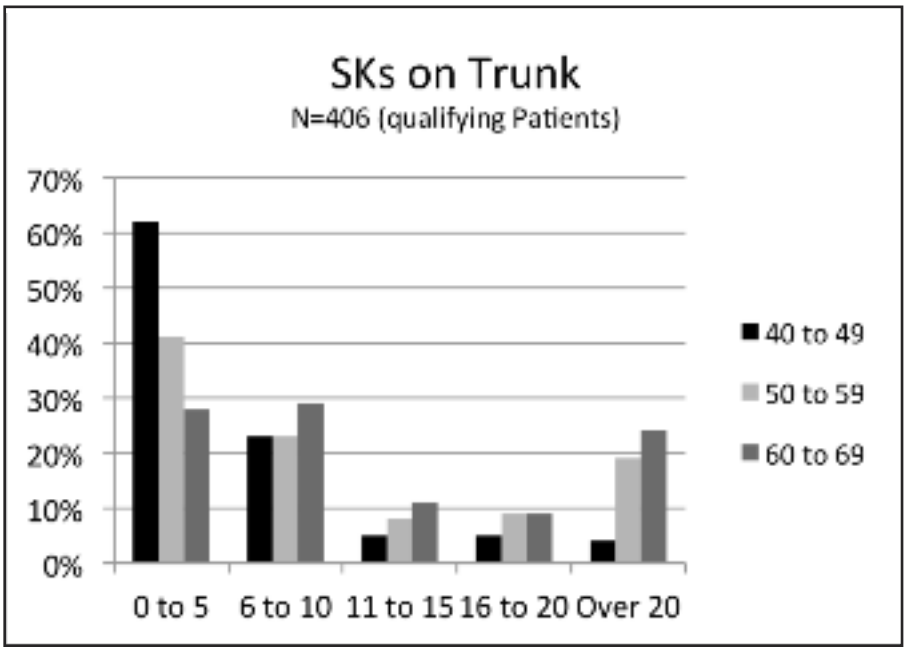

Figure 3. Percentage of patients with truncal seborrheic keratoses stratified by age range

significantly more SKs on their trunk and arms than women, although individual exceptions existed. The size of this gender difference is greater than what might be expected given that men have on average 19 percent more body surface area than women. Overall, most men had 16 or more SKs (64% of patients) while most women had 15 or fewer (52% of patients).

Concern about and knowledge of SKs and compensating actions. Fifty-five percent of patients asked about their SKs without being prompted, with 34 percent stating that they have asked a dermatologist about their SKs in the past and 27 percent of patients knowing the medical term for their diagnosis ("seborrheic keratosis"). Most patients ask about SKs due to both health and appearance concerns (Table 3). Men were more likely to ask about treatment mostly out of a concern for their health; cosmetic concern was more common among women as the main reason for desiring treatment for SK. Sixty-one percent of patients reported that at some point they have taken measures to disguise, hide, or deal with SKs due to their appearance (Table 4).

Reasons for removal of SKs. Slightly over one-third (38%) of patients have had SK lesions treated or removed in the past. The two most common reasons for having SKs treated or removed were concern about the "spots being something serious" and "not liking the way they look" (cosmetic appearance) (Figure 4).

Reasons for not removing SKs. The top reasons that patients had chosen not to have their SKs treated or removed was that they learned they are not cancerous, or that the "spots do not bother them enough." Another top reason for not having SK lesions treated was that the patient simply was not aware of treatment options (Figure 5).

Interest in treatment of SKs.

Patients were shown before and after treatment photos for SKs then asked how interested they would be in a treatment that would give similar results and be provided in the dermatology office setting. A large majority of patients (86%) were either extremely interested or somewhat interested in such a treatment option for SKs. Patients were then asked how interested they would be if the treatment were provided in the office setting for a reasonable cost paid by the patient, with over 80 percent of patients (83%) indicating that they were either extremely interested or somewhat interested in this treatment.

Factors influencing interest in SK treatment. In order to better understand the factors that may influence interest in treatment of non-symptomatic SKs among patients, a correlation analysis was completed (Table 5). Potential correlations between level of interest in treatment and factors such as location of SKs, gender, age, and income were evaluated. Clinically relevant, positive correlations were noted between the presence of SK spots on face and neck and interest in treatment and between female gender and interest in treatment. The significant positive correlation noted for the anatomic locations of face and/or neck shows that having one or more SKs on these sites increases interest in having the SKs treated or removed. The positive correlation for gender supports

Table 2. Prevalence and location of seborrheic keratosis including breakdown by age range

Location of lesion	How many SKs were observed in the following areas?			
	Total (A)	40–49 (B)	50–59 (C)	60–69 (D)
Average number of SKs observed on patient faces	3.6	3.6	2.9	4.4 BC*
Average number of SKs observed on patient necks/necklines	3.9	2.7	2.8	5.1 BC*
Average number of SKs observed on patient trunks	13.3	5.9	11.9 B*	16.9 BC*
Average number of SKs observed on patient arms	5.4	3.8	5.2	6.2 B*
Average number of SKs observed on patients (overall)	26.2	15.0	22.7 B*	32.6 BC*

*Denotes significant difference from column letters listed at the 90% confidence level

Table 3. Primary concern(s) of the patient related to their seborrheic karatoses

Concern	Was your primary concern in asking about SKs health or appearance related?		
	Total	Men	Women
Mostly a concern about my appearance	17%	10.0%	20.2%
More about appearance than health	5%	6.0%	4.5%
Equally about appearance and health	45%	38.0%	49.4%
More about health than appearance	14%	18.0%	12.4%
Mostly a concern about my health	18%	26.0%	13.5%
I do not recall	1%	C* 2%	--

N=406 (qualifying Patients)
*Indicates a significant difference from column listed at the 90% confidence level.

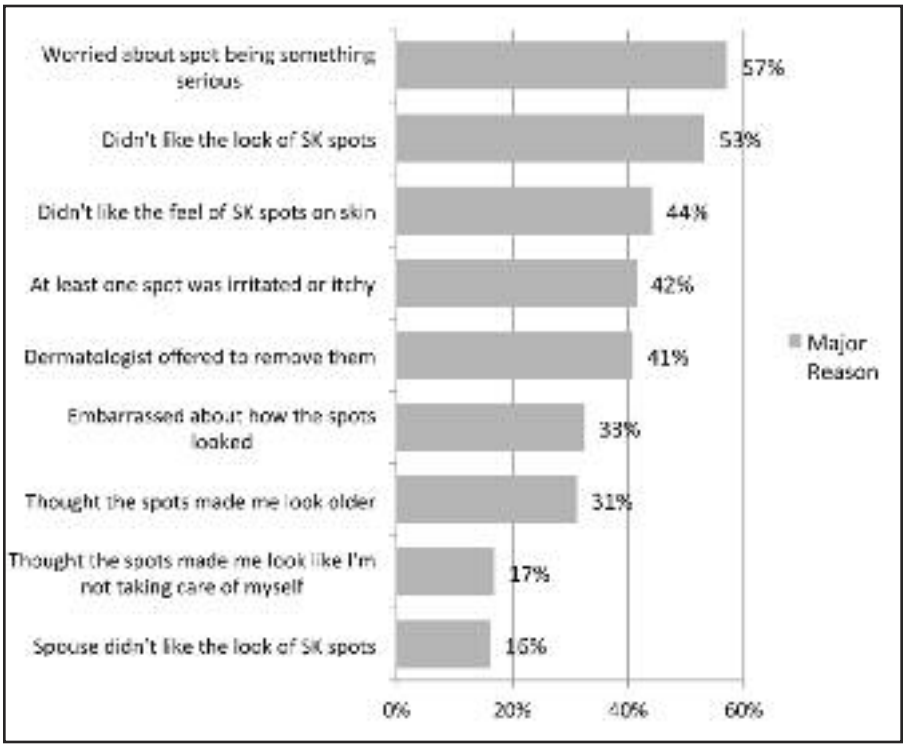

Figure 4. Reasons patients reported for desiring and undergoing treatment for their seborrheic keratoses. Question: Which of the following are the main reasons you had your spots treated or removed? (percent selecting as a major reason). N=406 (qualifying patients)

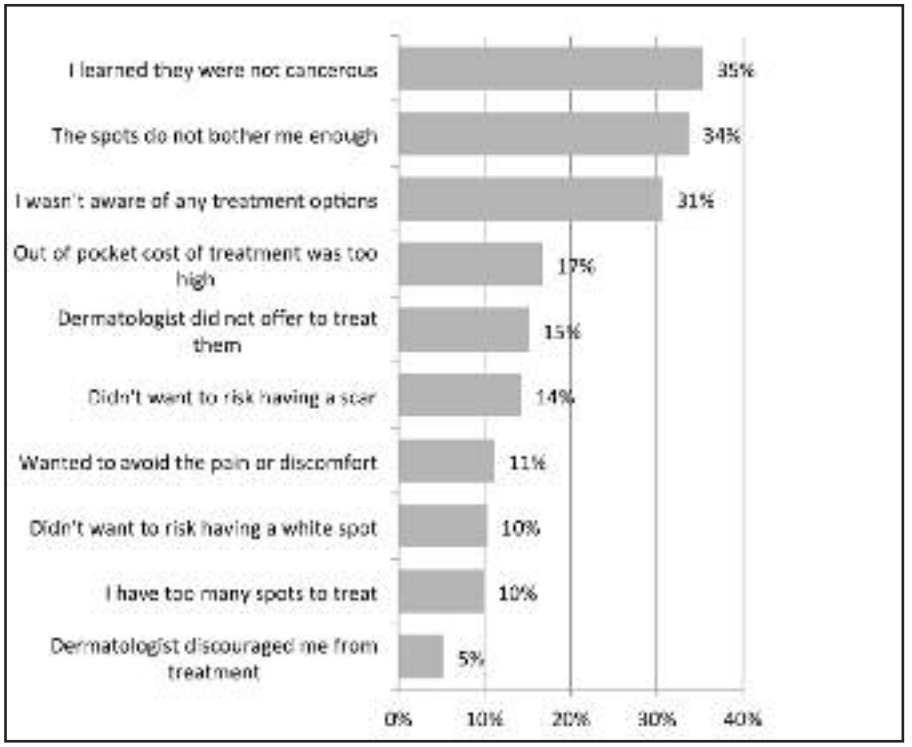

Figure 5. Reasons patients chose not to undergo treatment for their seborrheic keratoses. Question: How much of a factor were each of the following in your decision not to have SK spots treated or removed?
N=406 (qualifying patients)

overall that women are more likely to want SKs treated or removed. SKs on the trunk or arms, age, and income level demonstrated no significant impact on interest in treatment among patients who participated in this study. Notably, patients of all ages and income levels may equally demonstrate definite interest in treatment of at least some of their SKs.

A regression analysis was completed to evaluate whether concern about the appearance of SKs and/or worry about the health impact of the lesions (cancerous or not) drove interest in undergoing treatment for SKs (Figure 6). The regression model below was estimated with Interest in Treatment being the dependent variable and Motivation (health and/or appearance), and Motivation ^2 being the independent variables. As the graph of the regression equation illustrates, the peak level of interest in treatment occurred when there were primarily appearance concerns, but also some health concerns. It is also important to notice that the mean is overall at a very high level, varying between 4 and 5 on a 5-point scale.

DISCUSSION

Practical considerations related to management of non-symptomatic SKs in "real world" clinical practice.

Individuals who present with non-symptomatic SK as a primary diagnosis are often concerned about the possibility

of skin malignancy; however, some are clearly concerned from a cosmetic standpoint as they find SKs to be unattractive or "ugly."[2] Other times, non-symptomatic SKs are not a primary or secondary complaint, and are noticed on skin examination during an office visit. From a practical standpoint, when a clinician informs a patient of diagnosis of non-symptomatic SKs, which are benign based on appearance and history and do not require removal, many patients passively express disappointment that the SK lesions are not being treated. Sometimes they may ask near the end of the office visit if the SKs can be removed, emphasizing either overtly or subtly that their appearance is what is bothersome. This situation is often uncomfortable for clinicians as the office visit then transcends into a financial discussion, as removal of non-symptomatic SKs is not covered by third-party payors, meaning that the patient will then incur "out of pocket" expenses. It is helpful, however, if clinicians organize their approach to this situation and compartmentalize the management into the "cosmetic segment" of the office practice, similar to how other conditions are handled, such as photodamage/wrinkles, facial dyspigmentation/lentigines, scars, and telangiectasias. For some reason, the line of demarcation between "cosmetic" and "medically necessary" has not been clearly delineated in the

Table 4. Compensating actions by patients to disguise or cover seborrheic keratoses

Which of the following have you ever done to hide, disguise or deal with your SK spots?	
I've never done any of these	39%
Pick at them so they fall off	31%
Use make-up to disguise the spots	28%
Wear clothing designed to hide the spots, such as turtlenecks, scarves, or long sleeved shirts	16%
Avoid wearing a bathing suit, V-neck, or other clothing that would allow the spots to show	12%
Avoid looking at or touching them	11%
Wear my hair in a certain style to cover the spots	7%
Use wart remover treatment on the spots	5%

Regression analysis evaluating reasons driving interest in treatment of non-symptomatic seborrheic keratoses: Concern about appearance versus worry about health impact

	Unstandardized Coefficients		Standardized Coefficients CoefficientsStandardized Coefficients		
	B	Std. Error	Beta	T	Sig.
Motivation	0.462	0.201	0.789	2.294	0.023
Motivation^2	-0.103	0.033	-1.088	-3.161	0.002
(Constant)	4.260	0.289		14.726	0.000

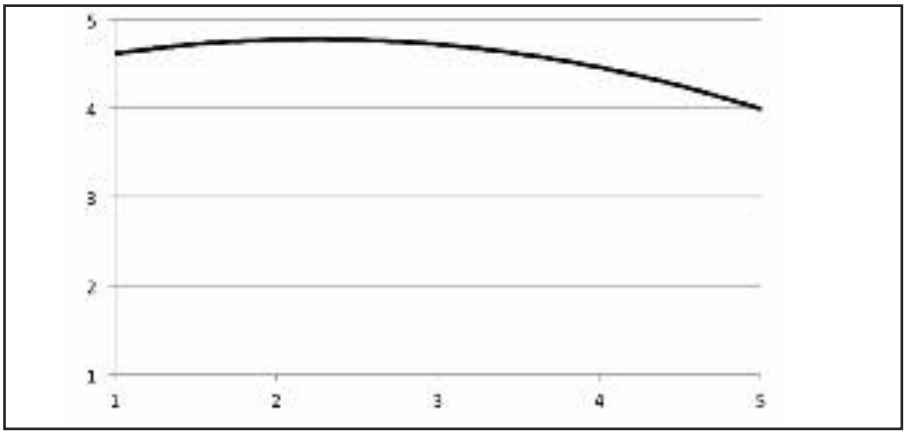

Figure 6. X-axis shows patient motivation for asking dermatologist about treatment on a sliding scale with 1 being "mostly a concern about appearance" and 5 being "mostly a concern about health. "Y-axis shows patient interest in treatment on a sliding scale with 1 being "not at all interested" and 5 being "extremely interested" in treatment.

Table 5. Correlation analysis evaluating factors that may influence patient interest in treating non-symptomatic seborrheic keratoses

		Interested in Tx
Face OR Neck	Pearson Correlation	0.144**
	Sig. (2-tailed)	0.004
	N	406
Trunk	Pearson Correlation	-0.043
	Sig. (2-tailed)	0.392
	N	406
Arms	Pearson Correlation	0.068
	Sig. (2-tailed)	0.172
	N	406
Gender	Pearson Correlation	0.183**
	Sig. (2-tailed)	0
	N	406
Age	Pearson Correlation	-0.084
	Sig. (2-tailed)	0.091
	N	406
Income	Pearson Correlation	-0.011
	Sig. (2-tailed)	0.848
	N	406

Correlation run against the presence or absence of at least 1 SK on face, neck, trunk, or arms

^Base size lower for income due to 100 respondents declining to provide income information

Figure 7. Multiple seborrheic keratoses on the back of a 64-year-old man. It is important that a careful skin examination be completed to assure that a more ominous type of skin lesion is not also present, as one or more can be overlooked within the "sea" of seborrheic keratoses.

minds of clinicians, and hence their office staff. Realistically, non-symptomatic SKs should be handled directly and professionally just like any other condition that clearly falls into the category of being a "cosmetic" concern (and not medically necessary).

Currently, therapies available for the treatment of SKs are physical modalities that are surgical or ablative. These include liquid nitrogen cryotherapy, shave removal, curettage, chemical peels, and certain laser modalities (e.g., pulsed CO_2, erbium-YAG); no currently available topical agents have been shown to be reliably effective, with very limited data available.[7]

Another clinically relevant and practical consideration is the importance of carefully evaluating patients to be certain that all of their lesions are truly SKs, and not potentially another more ominous diagnosis, such as a skin malignancy. This is especially true in patients with multiple SKs, as the examiner may wrongly assume that all of the lesions are SKs, complete a cursory skin examination, and miss a diagnosis such as melanoma (Figure 7).

SUMMARY

In this study, non-symptomatic SKs are the most common cutaneous neoplasm encountered in clinical practice. Although they may be a primary or secondary patient complaint, or may be noted incidentally on

examination, many patients were bothered by their appearance, concerned about their health impact (cancerous or not), or both. This article depicts many of the concerns and practical considerations related to SK management. As treatment of non-symptomatic SKs is not typically covered and incurs out of pocket expense to the patient, it is important that clinicians develop a practical and effective approach to compartmentalize the removal of SKs as a cosmetic therapy/procedure, with inclusion of their staff in order to effectively manage the clinician's time caring for patients.

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